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1 able to receive a strut 40. In one implementation, the strut 40 nests within the
2 recess 24 of the piston 20. The strut 40 has a hollow portion that is defined by a
3 bore 42. A shaft 55 is at least partially positioned within the bore 42 of the strut
4 40. (See fig. 1 of the present Application).

5 To summarize the above, the cylinder surrounds part of the piston 20; the
6 piston surrounds at least part of the strut 40; and the strut 40 surrounds at least part
7 of the shaft 55.

8 In addition to the above, at least one implementation described in the
9 present Application includes, a locking mechanism 50, in a first position, is
10 functional to engage a groove 26 in the piston 20 in a first position (see fig. 2B;
11 reference number 60). The locking mechanism 50 may also be in a second
12 position that does not engage the groove 26 in the piston 20 (See fig. 2A; reference
13 number 60).

14 **Claim 1 recites:**

15 A locking actuator comprising:

16 a piston adapted to be moved by a drive mechanism, the piston
17 having a first end and a second end, the second end being adapted to link to
18 an apparatus to be driven by the actuator, the piston defining a recess
19 originating proximal the first end;

20 a strut having a base and a tip, the strut adapted to at least partially
21 nest within the recess, the strut adapted to hold at least one locking
22 mechanism proximal to the tip; and

23 at least one locking mechanism held by the strut, the at least one
24 locking mechanism adapted to move into a first position engaging the
25 piston when the actuator is locked and adapted to move to a second position
not engaging the piston when the actuator is unlocked. (Emphasis added.)

26 Hart teaches a locking hydraulic actuator. According to the Office, Hart
27 includes at least one locking mechanism “(589a, 589b)” that functions in the same
28 manner as the locking mechanism recited in claim 1. The Applicant disputes the
29 Office’s finding for the following reasons.

1 As is shown in Fig. 5 of the Hart patent, a piston 512 is surrounded by a
2 cylinder 510. The piston houses a lock piston 544. The lock piston 544 has a
3 distal end that has lock piston stops 589a and 589b. These stops 589a and 589b
4 are better viewed in Fig. 6 of Hart. As can be seen in Fig. 6 the stops 589a and
5 589b are always touching the inner wall of the piston 512. Therefore the stops
6 589a and 589b are not able "to move to a second position not engaging the piston
7 when the actuator is unlocked." The quoted language is taken from claim 1.

8 In accordance with the above, claim 1 is allowable over Hart and the § 102
9 rejection should be withdrawn.

10 Marx teaches a hydraulic actuator with a mechanical lock. According to
11 the Office, Marx teaches a locking mechanism that functions in the same manner
12 as recited by claim 1. The Office points to the Abstract of Marx as the source of
13 this disclosure. The Applicant disputes the Office's finding for the following
14 reasons.

15 Referring to Fig. 8 of Marx, the patented apparatus includes a cylinder body
16 CB that houses a piston P. The piston P has a piston head PH. The piston head
17 PH has a number of lock bolts LB that are designed to engage in lock bolt cavities
18 52 defined in the cylinder body CB. As the piston PH moves within the cylinder
19 body CB, a locking piston LP may engage one or more locking bolts LB to cause
20 such a locking bolt LB to enter one of the cavities 52. Such an engagement
21 prevents the piston P from further movement (See Fig. 10 of Marx). As can be
22 seen in both Figs. 8 and 10, the lock bolts LB always engage or touch a surface of
23 the piston P, regardless of their positioning. Therefore, the lock bolts LB are not
24 able "to move to a second position not engaging the piston when the actuator is
25 unlocked."

1 In accordance with the above, claim 1 is allowable over Marx and the § 102
2 rejection should be withdrawn.

3 **Claim 9** recites:

4 A locking actuator comprising:

5 a piston having a longitudinal axis with a first length, the piston having a
6 first end and a second end, the first end being adapted to be moved by a drive
7 mechanism and the second end being adapted to link to an apparatus to be driven
8 by the actuator, the piston defining a recess originating at the first end and
9 extending along the longitudinal axis, the recess having a second length less than
10 or equal to the first length, the piston further defining at least one groove
11 projecting from the recess into the piston approximately perpendicular to the
12 longitudinal axis, the at least one groove located proximal to the first end;

13 a strut having a base and a tip, the strut being adapted to project into the
14 recess, the strut being adapted to movably hold at least one locking key proximal
15 to the tip;

16 at least one locking key movably held by the strut, the at least one locking
17 key being adapted to move into a first position engaging the at least one groove
18 when the actuator is locked and adapted to move to a second position not engaging
19 the at least one groove when the actuator is unlocked; and

20 a shaft movably held within the strut, the shaft extending from proximal the
21 base of the strut to proximal the tip of the strut, the shaft being adapted to move
22 the at least one locking key between the first position and the second position.

23 For similar reasons discussed in connection with claim 1, Marx does not
24 teach or suggest the subject matter of claim 9. In particular, Marx does not teach
25 or suggest at least a “piston further defining at least one groove projecting from
the recess into the piston... [and]... at least one locking key... adapted to move to a
second position not engaging the at least one groove when the actuator is
unlocked.”

In addition to the above, as is illustrated in Fig. 8 of the Marx patent, the
apparatus includes a cylinder body CB that houses at least a portion of a piston P.
The cylinder body CB further houses a locking piston LP. In general, the cylinder
body CB surrounds the locking piston LP, and the locking piston surrounds at least
part of the piston P. Again, this is shown in Fig. 8 of the Marx patent.

1 According to claim 9, a piston includes "a recess." The piston P of Marx
2 has no such recess. See the piston P of Marx (Fig. 8). Further according to claim
3 9, "a strut" is adapted to "project into the recess." Marx does not teach this subject
4 matter of claim 9 either. The piston P is solid, so Marx would not and does not
5 teach or suggest "a strut" that is adapted to "project into the recess" of a piston.
6 Therefore, it necessarily follows that Marx also does not teach or suggest "a shaft
7 movably held within the strut."

8 In accordance with the above, claim 9 is allowable over Marx and the §
9 102 rejection should be withdrawn.

10 Each of the rejected dependent claims depends from one of the
11 independent Claims 1 and 9 and includes other limitations that are not taught or
12 suggested by the Hart and/or Marx patents. Therefore, for at least of the above
13 reasons, Applicant respectfully submits that the §102 rejections of the claims is
14 improper. Applicant respectfully requests reconsideration and withdrawal of the
15 rejections.

16 *Additional Claims*

17 Claims 26-28 have been added by way of this Amendment. Independent
18 claim 26 includes the subject matter "a lever linked to the shaft, the lever being
19 arranged to move the shaft within the strut, such that the at least one locking key is
20 moved between the first position and the second position." This subject matter
21 was indicated by the Office as being allowable. See current Office Action, page 5.
22 Therefore, at least the indicated subject matter makes claim 26 allowable over
23 Hart and Marx. In addition, independent claim 26 is allowable for the reasons
24 discussed above in connection with claims 1 and 9. The additional dependent
25

1 claims are allowable at least due to their dependence upon an allowable
2 independent claim.

3 **Conclusion**

4 Applicant has considered the other references cited by the Office in the
5 Office Action. None of these references appear to affect the patentability of
6 Applicant's claims. By the foregoing remarks, Applicant believes that the pending
7 claims are allowable and the application is in condition for allowance. Therefore,
8 a Notice of Allowance is respectfully requested. Should the Examiner have any
9 further issues regarding this application, the Examiner is requested to contact the
10 undersigned attorney for the Applicant at the telephone number provided below.

11
12 Respectfully Submitted,

13 Date: 4-10-2006

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